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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SAUNDERS JR, JOSEPH

ART UNIT

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2615

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/532,546	Applicant(s) ITABASHI ET AL.	
	Examiner Joseph Saunders	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is based on the communications filed April 4, 2008. Claims 7 – 9 are currently pending and considered below.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7 – 9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 7 recites the limitation “in which a primary sound wave and a leakage sound wave are provided by the same speaker or speakers as the cancelling sound wave,” however the specification as originally filed does not provide support for “the same speaker or speakers”. While the specification does disclose a primary sound wave and a leakage sound being provided by the same speaker array as the cancelling sound wave, and the speaker array contains multiple speakers, this is not the same as “a primary sound wave and a leakage sound wave are provided by the same speaker or speakers as the cancelling sound wave”. Therefore the specification does not have support for a primary sound wave and a leakage sound wave being provided by the same speaker or speakers as the cancelling sound wave.

4. Claims 7 – 9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Again, regarding the limitation of "the same speaker or speakers", one of ordinary skill would not understand how it is possible given the specification as originally filed and the nature of a speaker to have the same speaker or speakers provide a primary sound wave with a leakage sound and at the same time also provide a cancelling sound wave to cancel the leakage sound.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 7 – 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 7 recites the limitations, "in which a primary sound wave and a leakage sound wave are provided by the same speaker or speakers as the cancelling sound wave," and "a speaker array in a configuration in which plurality of speakers are arranged". Confusion is created given the enablement problem of the limitation "the same speaker or speakers" in combination with the limitation "a speaker array in a configuration in which plurality of speakers are arranged" since uncertainty arises as to whether Applicant really intend for the limitation to read "the same speaker

array”, given the speaker array is a configuration in which a plurality of speakers are arranged. Therefore, since the only way the limitation of “the same speaker or speakers” can possibly make sense is to interpret the limitation as “the same speaker array”, the Examiner will interpret the claim for examination purposes to state “in which a primary sound wave and a leakage sound wave are provided by the same speaker array as the cancelling sound wave”.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bienek et al. (WO 02/078388 A2), hereinafter Bienek, in view of Foster et al. (US 5,815,578), hereinafter Foster.

Claim 7: Bienek discloses a reproducing apparatus for reproducing an audio signal (apparatus to create a sound field), comprising:

a first plurality of digital filters (delay means 1508 or adjustable digital filter can also be arranged to apply delays) each supplied with an audio signal (input signal 101);

a second plurality of digital filters (adjustable digital filter means 1512) each supplied with the audio signal (input signal 101);

a speaker array (DPAA) in a configuration in which plurality of speakers (output transducers 104) are arranged, in which signals representative of outputs of the first plurality digital filters are delivered to the respective plurality of speakers to form a sound field (Figure 7C and Figure 8); and

in which predetermined delay times are set at the first plurality of digital filters so that respective propagation times required until the audio signal arrives at a first point within the sound field through the first plurality of digital filters and the respective plurality of speakers coincide with each other (Figure 7C and Figure 8),

in which predetermined transfer characteristics (coefficients and Figures 11A – 11D) are set at the second plurality of digital filters to control sound at a second point within the sound field among sounds formed from outputs of the first plurality of digital filters (Figure 7C and Figure 8) (Bienek teaches that “one or the other of the signal delay means (1508) and adjustable digital filter (1512) may also be dispensed with,” Page 18 Lines 15 – 30. Bienek further teaches that the outputs of multiple Distributors can be combined by adders before reaching the DPAA, Figure 15. Therefore one of the Distributors in Figure 15 could be configured as taught by Bienek to include only signal delay means (1508) and the other configured to include only adjustable digital filter means (1512). The outputs of each distributor are then combined through the use of adders and provided to the same speaker array resulting in for example Figure 8 where sound is directed in directions (B1), (B2), and (B3).), and

Bienek does not disclose a plurality of subtraction circuits respectively supplied with the outputs of the first plurality of digital filters and outputs of the second plurality of

digital filters and operable to perform respective subtraction operations therebetween, in which signals representative of outputs of the plurality of subtraction circuits are respectively delivered to the plurality of speakers,

in which predetermined transfer characteristics are set at the second plurality of digital filters to control sound at a second point within the sound field among sounds formed from outputs of the first plurality of digital filters so as to cause a cancelling sound wave to be produced,

in which a primary sound wave and a leakage sound wave are provided by the same speaker or speakers (interpreted as same speaker array) as the cancelling sound wave, and in which the cancelling sound wave has a frequency and level which are the same as that of the leakage sound wave and the cancelling sound wave has a phase which is opposite that of the leakage sound wave.

Bienek does disclose reducing "side lobes" of the sound beams by providing a window function to improve directivity. Foster teaches another method that does better than just reducing "side lobes" or "leakage" it cancels "leakage". Foster teaches "In one embodiment, the present invention provides a leakage canceling signal which cancels the surround sound leakage signal in the vicinity of listener 100 so that the perception of listener 100 that the surround sound signal is emanating from reflecting surfaces is improved. For the surround sound leakage signal, a leakage canceling signal is generated in the vicinity of the listener by applying a leakage transmission signal to a direct speaker. The leakage canceling signal effectively suppresses the surround sound leakage signal so that it does not disturb the listener's perception. The leakage

transmission signal is derived as described below from a measured transfer function which describes the transmission and propagation of the surround sound leakage signal to the vicinity of the listener and the transfer function which describes the transmission and propagation of a direct signal to the listener,” Column 5 Lines 22 – 36 see also Figure 3 and Column 8 Lines 18 – 57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the transfer function, as taught by Foster, of the adjustable digital filters as disclosed by Bienek, thereby improving the directionality of the surround signal in the system of Bienek.

Claim 8: Bienek discloses the reproducing apparatus for reproducing an audio signal as set forth in claim 7, wherein the primary sound wave radiated from the speaker array is reflected on a wall surface, and arrives at the first point (Figure 8).

Claim 9: Bienek discloses the reproducing apparatus for reproducing an audio signal as set forth in claim 8, wherein the second point is at substantially the same location as the first point (The different sound beams (B1), (B2), and (B3) are all directed to substantially the same point of the listener (X), Figure 8).

Response to Arguments

9. Applicant's arguments filed April 4, 2008 have been fully considered but they are not persuasive. Applicant argues "the portions of Foster relied on by the Examiner do

Art Unit: 2615

not appear to disclose that a primary sound wave and a leakage sound wave are provided by the same speaker or speakers as the cancelling sound wave. Instead, such portions of Foster appear to specifically disclose that the leakage signal is supplied from speaker 300 and the leakage canceling signal is supplied from speaker 302," pages 8 – 9. As explained above in the 35 U.S.C. 112 rejection the Applicant does not have support for "the same speaker or speakers", the limitation is not enabling to one of ordinary skill in the art, and it is also creates confusion. The only reasonable meaning the Examiner can conclude from the limitation is that Applicant intends that "a primary sound wave and a leakage sound wave are provided by the same speaker array as the cancelling sound wave". And as described by Applicant in the arguments of pages 8 – 9, "portions of Foster appear to specifically disclose that the leakage signal is supplied from speaker 300 and the leakage canceling signal is supplied from speaker 302," where speaker 300 and speaker 302 form a "speaker array" or plurality of speakers.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2615

11. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Saunders whose telephone number is (571) 270-1063. The examiner can normally be reached on Monday - Thursday, 9:00 a.m. - 4:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Suhan Ni can be reached on (571) 272-7505. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2615

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S./

Examiner, Art Unit 2615

/Suhan Ni/

Primary Examiner, Art Unit 2614